AMENDMENTS TO THE SPECIFICATION:

Please amend the paragraph beginning at page 2, line 27, as follows:

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Sensor chip

The MOSFETs array gas sensor 10 realized (Fig. 1) has been designed in the aim of reducing the source and drain leakage currents and the power consumption of this type of gas sensors. Each device consists of 4 GasFETs, a temperature sensor (diode) and a heater. The actual chip size is 4.0 x 4.0 mm^2.

Please amend the paragraph beginning at page 3, line 1, as follows:

Electronic components

The heater is a semiconducting resistor, which is made during the p-well implantation of the MOSFET fabrication process. The transistors (NMOS) and the diode temperature sensor are made in a single diffusion step of doping atoms from CVD oxide films. Arrays with 4 medium or small MOSFETs 12 have been designed respectively with a channel length of 13.0 and 5.0 μm. The fabrication of NMOS transistors in a p-well technology allows to drive them separately. Their source/drain leakage currents have been limited by minimizing the p-n junction surface at the source and the drain regions. Therefore, the metal/semiconductor contacts are directly taken on the source and the drain just beside the gate. GasFETs operate with their drain and gate connected together with a constant current bias between the source and the drain. In this design, the drain and gate were not connected together to allow more flexibility during the characterization of the MOSFETs electrical properties.

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Please amend the paragraph beginning at page 3, line 15, as follows:

The thermal mass and therefore the power consumption of the sensor are minimized by the design. The GasFETs, the heater and the diode are located in a silicon island 18 isolated from the chip frame by a dielectric membrane 20. The membrane is made of LPCVD low-stress silicon nitride. A PECVD silicon nitride film is used as a passivation layer on the aluminum metallization 24. The membrane size is 1.8 x 1.8 mm^2 and the silicon island area is 900 x 900 μm^2 and 10 μm thick.

Please amend the paragraph beginning at page 3, line 33, as follows:

The process starts with the implantation of boron in a 4" silicon substrate 30 (25 Ωcm, n type, 300 μm thick double face polished) to form the MOSFETs p-well, the p side of the diode and the resistive heater. Also included in this first part is the deposition and patterning of boron and phosphorus doped CVD oxide films and the diffusion of the doping atoms to form the n+ and p+ regions of the electronic devices.

Please amend the paragraph beginning at page 5, line 22, as follows:

The design, fabrication and characterization of a low-power consumption MOSFETs array gas sensor have been presented. The sensor consists of a heating resistor, a diode temperature sensor and 4 GasFETs located in a silicon island thermally isolated from the chip frame by a dielectric membrane 14. The combination of microelectronics and MEMS (silicon bulk micro-machining) fabrication technologies was used to fabricate these devices. The array of 4 GasFETs has a low-power consumption of 80 mW at an operating temperature of 175°C. The silicon island also provides a uniform temperature all over the sensing area. The low thermal mass of the device allows the operation of the sensors in a temperature cycling mode.

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